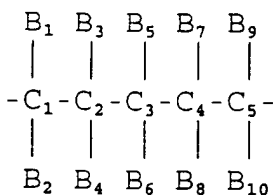


in which  $R_1$  and  $R_2$  are identical or different and are selected from the group which consists of hydrogen, substituted and unsubstituted  $C_{1-}$ , alkyl, substituted and unsubstituted hydroxy- $C_{1-}$ , -alkyl, substituted and unsubstituted  $C_{1-}$ , alkenyl, substituted and unsubstituted  $C_{1-}$ , alkynyl, substituted and unsubstituted aryl, substituted and unsubstituted acyl, substituted and unsubstituted cycloalkyl, substituted and unsubstituted aralkyl, substituted and unsubstituted heterocyclic group, halogen,  $OX_1$  and  $OX_2$ ,

6'  
cont. wherein  $X_1$  and  $X_2$  may be identical or different and are selected from the group which consists of hydrogen, substituted and unsubstituted  $C_{1-}$ , alkyl, substituted and unsubstituted hydroxy- $C_{1-}$ , -alkyl, substituted and unsubstituted  $C_{1-}$ , alkenyl, substituted and unsubstituted  $C_{1-}$ , alkynyl, substituted and unsubstituted aryl, substituted and unsubstituted acyl, substituted and unsubstituted cycloalkyl, substituted and unsubstituted aralkyl, substituted and unsubstituted heterocyclic group,

in which A is of the following formula (II):



wherein one or more of the carbon atoms selected from the group C<sub>3</sub>, C<sub>4</sub>, C<sub>5</sub> together with their substituents may also be absent, and at least one substituent present in the range from B<sub>1</sub> to B<sub>10</sub> is a C<sub>3-8</sub>-cycloalkyl-(C<sub>0-9</sub>)-alkyl group, wherein both the C<sub>3-8</sub> cycloalkyl group and the C<sub>0-9</sub> alkyl group may comprise one or more double bonds and one or two carbon atoms of the cycloalkyl group may be replaced by nitrogen, oxygen or sulfur atoms, and wherein both the cycloalkyl group and the alkyl group may be substituted with hydroxy, halogen, amino, oxo groups with branched or unbranched C<sub>1-9</sub> alkyl groups and C<sub>2-9</sub> alkenyl groups, wherein the C<sub>1-9</sub> alkyl groups and C<sub>2-9</sub> alkenyl groups may be substituted with hydrogen, hydroxy, amino, halogen and oxo groups, and the remaining substituents B<sub>1</sub> to B<sub>10</sub> present are selected from the group which consists of hydrogen, hydroxy, halogen, amino groups, C<sub>1-26</sub> alkyl groups, C<sub>1-26</sub> alkoxy groups, C<sub>1-26</sub>-alkoxy-C<sub>1-26</sub>-alkyl groups or both substituents of a C atom together form an oxo

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B

group, wherein each C<sub>1-26</sub> alkyl group and each C<sub>1-26</sub> alkoxy group may be branched or unbranched and be saturated or unsaturated with one or more double bonds and may be substituted with hydroxy, amino, halogen and oxo groups,

in which R<sub>3</sub> and R<sub>4</sub> are identical or different and are selected from the group which consists of substituted and unsubstituted C<sub>1-26</sub> alkyl, substituted and unsubstituted hydroxy-C<sub>1-26</sub>-alkyl, substituted and unsubstituted aryl, substituted and unsubstituted acyl, substituted and unsubstituted cycloalkyl, substituted and unsubstituted aralkyl, substituted and unsubstituted C<sub>1-26</sub> alkenyl, substituted and unsubstituted C<sub>1-26</sub> alkynyl, substituted and unsubstituted cycloalkyl, substituted and unsubstituted heterocyclic group, halogen, OX<sub>3</sub> and OX<sub>4</sub>,

wherein X<sub>3</sub> and X<sub>4</sub> are identical or different and consist of hydrogen, substituted and unsubstituted C<sub>1-26</sub> alkyl, substituted and unsubstituted hydroxy-C<sub>1-26</sub>-alkyl, substituted and unsubstituted aryl, substituted and unsubstituted aralkyl, substituted and unsubstituted C<sub>1-26</sub> alkenyl, substituted and unsubstituted C<sub>1-26</sub> alkynyl, substituted and unsubstituted cycloalkyl, substituted and unsubstituted heterocyclic group, a

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B

silyl, a cation of an organic and inorganic base, a metal of main groups I, II or III of the periodic system, ammonium, substituted ammonium and ammonium compounds derived from ethylenediamine or amino acids, and the pharmaceutically acceptable salts, esters thereof and salts of the esters.

~~2~~ 28. Compound according to claim ~~21~~, wherein the organophosphorus compounds are of the formula (II)



wherein

wherein  $\text{X}_1$  is hydrogen and  $\text{R}_2$  an acyl group, a formyl group or acetyl group, and  $\text{R}_3$ ,  $\text{R}_4$  and A have the same meaning as in formula (I).

~~3~~ 29. Compound according to claim ~~27~~, wherein  $\text{X}_3$  and  $\text{X}_4$  are selected from the group which consists of  $\text{OX}_3$  and  $\text{OX}_4$ , and  $\text{X}_3$  and  $\text{X}_4$  are selected from the group comprising hydrogen, a metal of

main groups I, II or III of the periodic system, ammonium, substituted ammonium, or ammonium compounds derived from ethylenediamine or amino acids.

~~4~~ 30. Compound according to claim ~~27~~, wherein the carbon chain of A with the formula (II) consists of three carbon atoms  $C_1$ ,  $C_2$ ,  $C_3$ .

*b' cont.*  
~~5~~ 31. Compound according to claim ~~27~~, wherein  $B_1$  and  $B_2$  together or  $B_7$  and  $B_8$  together form an oxo group and the carbon chain in A consists of four carbon atoms  $C_1$ ,  $C_2$ ,  $C_3$ ,  $C_4$ .

~~6~~ 32. Compound according to claim ~~27~~, wherein the carbon chain of A with the formula (II) consists of four carbon atoms  $C_1$ ,  $C_2$ ,  $C_3$ ,  $C_4$  and  $B_7$  or  $B_8$  or both are a hydroxy group.

~~7~~ 33. Compound according to claim ~~27~~, wherein the carbon chain consists of 5 carbon atoms  $C_1$ ,  $C_2$ ,  $C_3$ ,  $C_4$ ,  $C_5$ , wherein  $B_1$  and  $B_2$  together form an oxo group and  $B_9$  or  $B_{10}$  are a hydroxyl group or  $B_9$  and  $B_{10}$  together also form an oxo group.

~~8~~  
34. Compound according to claim 32, wherein R<sub>3</sub> or R<sub>4</sub> or both are methylene groups.

C ~~9~~  
35. A pharmaceutical preparation for the ~~prevention and~~ treatment of infectious processes in humans and animals which are caused by viruses, bacteria, fungi or parasites and as a fungicide, bactericide or herbicide in plants, comprising  
a therapeutically effective amount of an organophosphorous compound according to claim ~~27~~<sup>1</sup>, and a pharmaceutically acceptable carrier.

b.  
c. ~~10g~~  
36. A therapeutic method for the ~~prevention and~~ treatment of infectious processes in humans and animals which are caused by viruses, bacteria, fungi or parasites and as a fungicide, bactericide or herbicide in plants, comprising  
administering to a subject selected from the group consisting of a human, an animal, and a plant, a therapeutically effective amount of an organophosphorus compound according to claim ~~27~~<sup>1</sup>.

~~12~~  
37. A method according to claim 36, wherein the infections are caused by bacteria, viruses, fungi or unicellular parasites

or multicellular parasites.

<sup>12</sup>  
~~38~~. A method according to claim ~~36~~<sup>12</sup>, wherein the infections are caused by bacteria which are selected from the group which consists of bacteria of the family Propionibacteriaceae, the genus Propionibacterium, the species Propionibacterium acnes, bacteria of the family Actinomycetaceae, the genus Actinomyces, bacteria of the genus Corynebacterium, the species Corynebacterium diphtheriae and Corynebacterium pseudotuberculosis, bacteria of the family Mycobacteriaceae, of the genus Mycobacterium, the species Mycobacterium leprae, Mycobacterium tuberculosis, Mycobacterium bovis and Mycobacterium avium, bacteria of the family Chlamydiaceae, the species Chlamydia trachomatis and Chlamydia psittaci, bacteria of the genus Listeria, the species Listeria monocytogenes, bacteria of the species Erysipelthrix rhusiopathiae, bacteria of the genus Clostridium, bacteria of the genus Yersinia, the species Yersinia pestis, Yersinia pseudotuberculosis, Yersinia enterocolitica and Yersinia ruckeri, bacteria of the family Mycoplasmataceae, of the genera Mycoplasma and Ureaplasma, the species Mycoplasma pneumoniae, bacteria of the genus Brucella, bacteria of the genus Bordetella, bacteria of the family Neisseriaceae, of the genera

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Neisseria and Moraxella, the species Neisseria meningitides, Neisseria gonorrhoeae and Moraxella bovis, bacteria of the family Vibrionaceae, the genera Vibrio, Aeromonas, Plesiomonas and Photobacterium, the species Vibrio cholerae, Vibrio anguillarum and Aeromonas salmonicidas, bacteria of the genus Campylobacter, the species Campylobacter jejuni, Campylobacter coli and Campylobacter fetus, bacteria of the genus Helicobacter, the species Helicobacter pylori, bacteria of the families Spirochaetaceae and Leptospiraceae, the genera Treponema, Borrelia and Leptospira, Borrelia burgdorferi, bacteria of the genus Actinobacillus, bacteria of the family Legionellaceae, of the genus Legionella, bacteria of the family Rickettsiaceae and family Bartonellaceae, bacteria of the genera Nocardia and Rhodococcus, bacteria of the genus Dermatophilus, bacteria of the family Pseudomonadaceae, the genera Pseudomonas and Xanthomonas, bacteria of the family Enterobacteriaceae, the genera Escherichia, Klebsiella, Proteus, Providencia, Salmonella, Serratia and Shigella, bacteria of the family Pasteurellaceae, the genus Haemophilus, bacteria of the family Micrococcaceae, the genera Micrococcus and Staphylococcus, bacteria of the family Streptococcaceae, the genera Streptococcus and Enterococcus and bacteria of the family Bacillaceae, the genera Bacillus and



Clostridium, and in the eradication of Helicobacter in ulcers of the gastrointestinal tract.

<sup>13</sup>  
39. A method according to claim ~~38~~<sup>39</sup>, wherein the infections are caused by viruses which are selected from the group which consists of viruses of the genus Parvoviridae, parvoviruses, dependoviruses, densoviruses, viruses of the genus Adenoviridae, adenoviruses, mastadenoviruses, aviadenoviruses, viruses of the genus Papovaviridae, papovaviruses, papillomaviruses, polyomaviruses, JC virus, BK virus and miopapovaviruses, viruses of the genus Herpesviridae, herpes simplex viruses, varicella-zoster viruses, human cytomegalovirus, Epstein-Barr viruses, human herpesvirus 6, human herpesvirus 7, human herpesvirus 8, viruses of the genus Poxviridae, poxviruses, orthopoxviruses, parapoxviruses, molluscum contagiosum virus, aviviruses, capriviruses, leporipoxviruses, primarily hepatotropic viruses, hepatitsviruses, hepatitis A viruses, hepatitis B viruses, hepatitis C viruses, hepatitis D viruses, hepatitis E viruses, hepatitis F viruses, hepatitis G viruses, hepadnaviruses, all hepatitsviruses, hepatitis B virus, hepatitis D viruses, viruses of the genus Picornaviridae, picornaviruses, all enteroviruses, all polioviruses, all coxsackie-viruses, all echoviruses, all

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B' cont.  
rhinoviruses, hepatitis A virus, aphthoviruses, viruses of the genus Calciviridae, hepatitis E viruses, viruses of the genus Reoviridae, reoviruses, orbiviruses, rotaviruses, viruses of the genus Togaviridae, togaviruses, alphaviruses, rubiviruses, pestiviruses, rubellavirus, viruses of the genus Flaviviridae, flaviviruses, FSME virus, hepatitis C virus, viruses of the genus Orthomyxoviridae, all influenza viruses, viruses of the genus Paramyxoviridae, paramyxoviruses, morbillivirus, pneumovirus, measles virus, mumps virus, viruses of the genus Rhabdoviridae, rhabdoviruses, rabies virus, lyssavirus, vascular stomatitisvirus, viruses of the genus Coronaviridae, coronaviruses, viruses of the genus Bunyaviridae, bunyaviruses, nairovirus, phlebovirus, uukuvirus, hantavirus, hantaan virus, viruses of the genus Arenaviridae, arenaviruses, lymphocytic choriomeningitis virus, viruses of the genus Retroviridae, retroviruses, all HTL viruses, human T-cell leukaemia virus, oncornaviruses, spumaviruses, lentiviruses, all HI viruses, viruses of the genus Filoviridae, Marburg and Ebola virus, slow-viruses, prions, oncoviruses and leukaemia viruses.

<sup>14</sup>  
~~40~~. A method according to claim ~~36~~<sup>14</sup>, wherein the infections are caused by unicellular parasites comprising the causative